

IN THE CLAIMS:

Please cancel Claims 1-7, 11-23, and 27-35 without prejudice to or disclaimer of the subject matter presented therein.

Please amend Claims 8-10 and 24-26, and add Claims 36-41 as follows.

1. – 7. (Canceled)

8. (Currently Amended) An apparatus for embedding a digital watermark in a document image, comprising:

outer shape detection means for detecting circumscribing outer shapes of characters in the document image, said outer shapes including a first outer shape, a second outer shape that neighbors the first outer shape, and a third outer shape that neighbors the second outer shape;

reference calculation means for setting a plurality of reference lines, said reference lines extending references at given intervals in a column direction and being spaced apart by a basic pitch in a row direction, said reference lines including a first reference line located between the first outer shape and the second outer shape, and a second reference line located between the second outer shape and the third outer shape; and

control means for controlling at least one of the second and third outer shapes so that a distance between the first reference line and an edge of the second outer shape is different from a distance between the second reference line and an edge of the third outer shape, of outer shapes in a line of interest, so as to set a parameter between the reference, which is located between a first outer shape and the second outer shape that neighbors the first outer shape, and the second outer shape, and a parameter between the reference, which is located between the second outer shape and the third outer shape that neighbors the second outer shape, and the third outer shape, to be different from each other in accordance with digital watermark information to be embedded.

9. (Currently Amended) A method for embedding a digital watermark in a document image, comprising:

an outer shape detection step of detecting circumscribing outer shapes of characters in the document image, said outer shapes including a first outer shape, a second outer shape that neighbors the first outer shape, and a third outer shape that neighbors the second outer shape;

a reference calculation step of setting a plurality of reference lines, said reference lines extending references at given intervals in a column direction and being spaced apart by a basic pitch in a row direction, said reference lines including a first reference line located between the first outer shape and the second outer shape, and a second reference line located between the second outer shape and the third outer shape; and

a control step of controlling at least one of the second and third outer shapes so that a distance between the first reference line and an edge of the second outer shape is different from a distance between the second reference line and an edge of the third outer shape, ~~of outer shapes in a line of interest, so as to set a parameter between the reference, which is located between a first outer shape and the second outer shape that neighbors the first outer shape, and the second outer shape, and a parameter between the reference, which is located between the second outer shape and the third outer shape that neighbors the second outer shape, and the third outer shape, to be different from each other in accordance with digital watermark information to be embedded.~~

10. (Currently Amended) A program, embodied in a computer-readable memory, for making a computer execute a method of claim 9.

11. – 23. (Canceled)

24. (Currently Amended) An apparatus for extracting data embedded in a document image, comprising:

outer shape detection means for detecting circumscribing outer shapes of characters in the document image, said outer shapes including a first outer shape, a second outer shape that neighbors the first outer shape, and a third outer shape that neighbors the second outer shape;

reference calculation means for setting a plurality of reference lines, said reference lines extending references at given intervals in a column direction and being spaced apart by a basic pitch in a row direction, said reference lines including a first reference line located between the first outer shape and the second outer shape, and a second reference line located between the second outer shape and the third outer shape; and

extraction means for comparing a first distance, between the first reference line and an edge of the second outer shape, to a second distance, between the second reference line and an edge of the third outer shape, first parameter between the reference, which is located between a first outer shape and a second outer shape that neighbors the first outer shape, and the second outer shape, and a second parameter between the reference which is located between the second outer shape and a third outer shape that neighbors the second outer shape, and the third outer shape, of the outer shapes in a line of interest, and extracting data corresponding to a comparison result of the distances parameters as data embedded using the first and second parameters distances.

25. (Currently Amended) A method for extracting data embedded in a document image, comprising:

an outer shape detection step of detecting circumscribing outer shapes of characters in the document image, said outer shapes including a first outer shape, a second outer shape that neighbors the first outer shape, and a third outer shape that neighbors the second outer shape;

a reference calculation step of setting a plurality of reference lines, said reference lines extending references at given intervals in a column direction and being spaced apart by a basic pitch in a row direction, said reference lines including a first reference line located between the first outer shape and the second outer shape, and a second reference line located between the second outer shape and the third outer shape; and

an extraction step of comparing a first distance, between the first reference line and an edge of the second outer shape, to a second distance, between the second reference line and an edge of the third outer shape, ~~first parameter between the reference, which is located between a first outer shape and a second outer shape that neighbors the first outer shape, and the second outer shape, and a second parameter between the reference which is located between the second outer shape and a third outer shape that neighbors the second outer shape, and the third outer shape,~~ of the outer shapes in a line of interest, and extracting data corresponding to a comparison result of the distances ~~parameters~~ as data embedded using the first and second ~~parameters~~ distances.

26. (Currently Amended) A program, embodied in a computer-readable memory, for making a computer execute a method of claim 25.

27. – 35. (Cancelled)

36. (New) An apparatus according to claim 8, wherein said control means performs control by changing a position of at least one of the second and the third outer shapes, and by performing a corresponding change to a position of a character circumscribed by the changed outer shape.

37. (New) An apparatus according to claim 8, wherein said control means performs control by changing a size of at least one of the second and third outer shapes, and by performing a corresponding change to a size of a character circumscribed by the changed outer shape.

38. (New) An apparatus according to claim 8, wherein the basic pitch is calculated as the average value of the distances between circumscribing outer shapes.

39. (New) A method according to claim 9, wherein said control step performs control by changing a position of at least one of the second and the third outer shapes, and by performing a corresponding change to a position of a character circumscribed by the changed outer shape.

40. (New) A method according to claim 9, wherein said control step performs control by changing a size of at least one of the second and third outer shapes, and by performing a corresponding change to a size of a character circumscribed by the changed outer shape.

41. (New) A method according to claim 9, wherein the basic pitch is calculated as the average value of the distances between circumscribing outer shapes.